

1. A method of operating a communication system, the method comprising:
receiving at least four first digital data bits;
entering the at least four digital data bits into a first data structure to yield
a first amplitude value;
5 processing the first amplitude value to generate a single analog signal
cycle;
transmitting the single analog signal cycle;
receiving the single analog signal cycle;
processing the single analog signal cycle to generate a second amplitude
10 value; and
entering the second amplitude value into a second data structure to yield
at least four second digital data bits.

2. A method of operating a digital data encoding system, the method
15 comprising:

receiving at least four digital data bits;
entering the at least four digital data bits into a data structure to yield a
symbol; and
processing the symbol to generate a single analog signal cycle.

20 3. The method of claim 2 wherein the symbol represents an amplitude value for
the single analog signal cycle.

4. The method of claim 2 further comprising:

25 transmitting at least one maximum amplitude to a receiver system; and
receiving an acknowledgment from the receiver system.

5. A method of operating a digital data decoding system, the method comprising:

receiving a single analog signal cycle;

processing the single analog signal cycle to generate a symbol; and

5 entering the symbol into a data structure to yield at least four digital data bits.

6. The method of claim 5 wherein the symbol represents an amplitude value for the single analog signal cycle.

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7. The method of claim 5 wherein processing the single analog signal cycle comprises detecting a relative zero-axis crossing of the single analog signal cycle.

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8. The method of claim 5 wherein processing the single analog signal cycle comprises detecting a first amplitude value and a second amplitude value of the single analog signal cycle.

9. The method of claim 5 further comprising:

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receiving at least one maximum amplitude from a transmitter system;
adjusting the data structure based on the at least one maximum amplitude; and

generating and transmitting an acknowledgment to the transmitter system.

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10. A digital data encoding system, comprising:

a data structure system configured to receive at least four digital data bits, enter the at least four digital data bits into a data structure to yield a symbol, and transfer the symbol; and

a signal generating system configured to receive the symbol and process

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the symbol to generate a single analog signal cycle.

11. The digital data encoding system of claim 10 wherein the symbol comprises an amplitude value for the single analog signal cycle.

12. The digital data encoding system of claim 10 wherein the signal generating
5 system is further configured to:

transmit at least one maximum amplitude to a receiver system; and
receive an acknowledgment from the receiver system.

13. A digital data decoding system, comprising:

10 a signal processing system configured to receive a single analog signal cycle, process the single analog signal cycle to generate a symbol, and transfer the symbol; and

15 a data structure system configured to receive the symbol and enter the symbol into a data structure to yield at least four digital data bits.

14. The digital data decoding system of claim 13 wherein the symbol comprises an amplitude value for the single analog signal cycle.

15. The digital data decoding system of claim 13 wherein the signal processing
20 system is further configured to detect a relative zero-axis crossing of the single analog signal cycle.

16. The digital data decoding system of claim 13 wherein the signal processing system is further configured to detect a first amplitude value and a second
25 amplitude value of the single analog signal cycle.

17. The digital data decoding system of claim 13 wherein the data structure system is further configured to:

receive at least one maximum amplitude from a transmitter system;
adjust the data structure based on the at least one maximum amplitude;

5 and

generate and transmit an acknowledgment to the transmitter system.

18. A software product for encoding digital data onto an analog signal, comprising:

10 encoding software configured when executed by a processor to direct the processor to receive at least four digital data bits, enter the at least four digital data bits into a data structure to yield a symbol, and process the symbol to generate a single analog signal cycle; and

15 a software storage medium configured to store the encoding software.

19. The software product of claim 18 wherein the symbol comprises an amplitude value for the analog signal cycle.

20. The software product of claim 18 wherein the encoding software is further configured to direct the processor to:

transmit at least one maximum amplitude to a receiver system; and
receive an acknowledgment from the receiver system.

21. A software product for decoding digital data from an analog signal, comprising:

25 decoding software configured when executed by a processor to direct the processor to receive a single analog signal cycle, process the single analog signal cycle to generate a symbol, and enter the symbol into a data structure to yield at least four digital data bits; and

30 a software storage medium configured to store the decoding software.

22. The software product of claim 21 wherein the symbol comprises an amplitude value for the single analog signal cycle.
23. The software product of claim 21 wherein the decoding software is further configured to direct the processor to detect a relative zero-axis crossing of the single analog signal cycle.
24. The software product of claim 21 wherein the decoding software is further configured to direct the processor to detect a first amplitude value and a second amplitude value of the single analog signal cycle.
25. The software product of claim 21 wherein the decoding software is further configured to direct the processor to:
- receive at least one maximum amplitude from a transmitter system;
 - adjust the data structure based on the at least one maximum amplitude;
 - and
 - generate and transmit an acknowledgment to the transmitter system.